

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

A new Abstract is attached, as required in the office action, which reduces the number of words and employs a single paragraph.

The objection to claims 6-12 under 37 CFR 1.75(c) as being in improper multiple dependent form is overcome by the above amendments.

The claims have been amended for clarity.

Also, claim 1 has been amended to recite a feature that the resonant circuit, the wireless transmitter, and the wireless receiver are coupled to each other via a directional coupler in which the transmission signal is transmitted from the transmitter to the antenna and the reception signal is transmitted from the antenna to the receiver.

Claim 2 has been amended to recite a feature that the resonant circuit, the wireless transmitter, and the wireless receiver are coupled to each other via a circulator in which the transmission signal is transmitted from the transmitter to the

antenna and the reception signal is transmitted from the antenna to the receiver.

Claim 3 has been amended to emphasize a feature that the resonant circuit and the wireless receiver are coupled to each other via a first isolator in which the reception signal is transmitted from the antenna to the receiver, and the resonant circuit and the wireless transmitter are coupled to each other via a second isolator in which the transmission signal is transmitted from the transmitter to the antenna.

New claim 13 recites a feature that the wireless transmitter and the wireless receiver are coupled to each other via a circuit in which the transmission signal is transmitted from the transmitter to the antenna and the reception signal is transmitted from the antenna to the receiver.

Claims 1-3 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US 6,194,993) in view of Arndt et al. (US 6,097,189). Claims 4 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US 6,194,993) in view of Everett et al. (US 5,317,330). The Applicants respectfully traverse these rejections based on the following points.

The rejection against claim 1 proposes that:

"Hayashi et al. teaches a non-contact IC card reading/writing apparatus comprising: a loop antenna (col. 6 lines 38-40), which supplies both electric power and a transmission signal to a non-contact IC card by way of an electromagnetic induction effect (col. 5 lines 5-10) and acquires a reception signal from the non-contact IC card by way of a load variation (col. 6 lines 24-30); a wireless transmitter, which supplies both electric power and transmission data (col. 4 lines 6-10); a wireless receiver, which acquires a reception signal from the loop antenna; wherein data transmitted from the non-contact IC card is modulated from the reception signal by modulating circuit (col. 8 lines 9-11). But Hayashi et al. is silent on teaching a directional coupler for coupling the receiver and the transmitter. Furthermore, Hayashi et al. is not explicit in teaching a resonant circuit which resonates the loop antenna at a desired frequency. On the other hand, Arndt et al. in an art related reader invention teaches the receiver and the transmitter of a reader are coupled by a directional coupler (col. 12 lines 59-65) in order to provide reference signal between the receiver and the transmitter for determining phase change. One skilled recognizes that most antennas are resonant devices, which operate efficiently over a relatively narrow frequency band. An antenna must be tuned to the same frequency band that the radio system operates in, otherwise reception and/or transmission will be impaired."

By contrast to the proposed disclosure, however, Arndt et al. fail to explicitly disclose that the directional coupler transmits the reception signal from the antenna to the receiver. This is also apparent in view of Fig. 2. In Fig. 2, the directional coupler 114 is connected to the transmitter antenna

108 and the detectors 116, 118 and 120 by way of the frequency doubler 115, and is not connected to the receiver antennas 102, 104 and 106. Accordingly, the reference does not teach or suggest the subject matter of claim 1 at least because the reference lacks a non-contact IC card reading/writing apparatus comprising a directional coupler in which the reception signal is transmitted from the antenna to the receiver.

Furthermore, the Applicants respectfully submit that those skilled in the art would not have been motivated to combine Hayashi et al. with Arndt et al. This is because Arndt et al. teaches to use a separate transmitter antenna and a plurality of receiver antennas, whereas Hayashi et al. teach the use of only one antenna for transmitting and receiving. These antenna systems are completely different from each other. Those skilled in the art would have had no motivation to combine these antenna systems, and even if such a combination were attempted, it is difficult to see how Hayashi et al. could be modified to achieve the combination.

In accordance with the discussion provided above, the Applicants respectfully submit that the applied references do not teach or suggest at least the subject matter of claim 1 directed

to a directional coupler in which the reception signal is transmitted from the antenna to the receiver.

Therefore, it is submitted that allowance of claim 1 is warranted.

Each of independent claims 2, 3 and 13 recites subject matter similar to that discussed above distinguishing claim 1 from the applied references. In addition, the applied references fail to teach or suggest any circulator, any isolator or any circuit in which the transmission signal is transmitted from the transmitter to the antenna and the reception signal is transmitted from the antenna to the receiver therein.

Therefore, it is submitted that allowance of claims 2, 3 and 13 is warranted.

The rejection against claim 4 proposes that:

"Hayashi et al. teaches a non-contact IC card reading/writing apparatus comprising: a loop antenna (col. 6 lines 38-40), which supplies both electric power and a transmission signal to a non-contact IC card by way of an electromagnetic induction effect (col. 5 lines 5-10) and acquires a reception signal from the non-contact IC card by way of a load variation (col. 6 lines 24-30); a wireless transmitter, which supplies both electric power and transmission data (col. 4 lines 6-10); and a wireless receiver, which acquires a reception signal from the loop antenna; wherein data transmitted from the non-contact IC card is modulated from the reception signal by modulating circuit (col. 8 lines 9-11). Furthermore, Hayashi et al. teaches the response from the tag is

generated based on a load variation (col.8 lines 57-59). However, Hayashi et al. is silent on teaching a first resonant circuit, which resonates the loop antenna at a first frequency and a wireless receiver, which acquires a reception signal from the loop antenna via a second resonant circuit which is connected to the loop antenna by way of a coupling capacitor and is resonated at a second frequency. On the other hand, Arndt et al. in an art related RF tag invention teaches a reader having a dual resonant antenna which perform parallel resonant at the received frequency and series resonant at the transmitted frequency (col. 2 lines 5-15) so as to enable increase retransmitted power from the tag to the reader."

By contrast to the proposed disclosure, however, the Applicants respectfully note that Everett et al. fail to explicitly disclose a second resonant circuit connects to the loop antenna by way of coupling capacitor. Although Everett et al. disclose several capacitors in its specification, none of them is coupling capacitor, but rather each is a capacitor for either parallel resonance or series resonance.

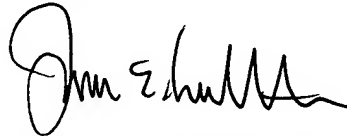
In accordance with the discussion provided above, the Applicants respectfully submit that the individual or combined teachings of the applied references would not have rendered obvious at least the subject matter of claim 4 that a second resonant circuit connects to the loop antenna by way of coupling capacitor.

Therefore, it is submitted that allowance of claims 4 and all claims dependent therefrom is warranted.

In view of the above, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



Date: February 16, 2006

James E. Ledbetter
Registration No. 28,732

JEL/att

ATTORNEY DOCKET NO. L8612.03112
STEVENS, DAVIS, MILLER & MOSHER, L.L.P.
Suite 850
1615 L Street, N.W.
Washington, D.C. 20036
Telephone: (202) 785-0100
Facsimile: (202) 408-5200